

Laboratory **EMC Division, SAMEER-Centre for Electromagnetics, Ministry of Electronics and Information Technology, Government of India, 2nd Cross Road, C.I.T Campus, Taramani, Chennai, Tamil Nadu**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-7885 (in lieu of T-0464)**

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| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|-------------------------|---|--|
|-----|----------------------------|-------------------------|---|--|

ELECTRONICS TESTING

| I. | EMC TEST FACILITY | | | |
|----|--|-------------------------|--|--|
| 1. | Electrical / Electronic Product | Conducted Emission Test | CISPR 11,2015 CISPR 14-1,2016 CISPR 22,2008 CISPR 32,2015 CISPR 25,2016 CISPR 15,2015 FCC Part 15 B & 18,2014 BS EN 55011,2010 BS EN 55022,2010 BS EN 55025,2017 BS EN 55015,2013 BS EN 61000-6-3,2011 BS EN 61000-6-4,2011 IEC 61000-6-3,2011 IEC 61000-6-4,2011 BS EN 55014-1, 2011 IEC 60601-1-2,2014 BS EN 60601-1-2,2015 IEC 60255-26, 2013 BS EN 62040-2,2006 IEC 62040-2,2016 EN/ETSI 300 386,2015 IEC 61326-1,2012 TEC/SD/DD/EMC-221/05/OCT-16, EN 50091-2,1996/GR 1089,2006 SAE J1113-41,2000 AIS-004,2015 | 9 kHz to 108 MHz Upto 154 dBµV Upto 120 dBµA |

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| | | Radiated Emission Test | CISPR 11,2015 CISPR 25,2016 CISPR 22,2008 CISPR 32,2015 CISPR 14-1,2016 FCC part 15 B & 18,2014 BS EN 55022,2010 BS EN 55025,2017 BS EN55011,2010 BS EN 61000-6-3,2011 BS EN 61000-6-4,2011 BS EN 55014-1, 2006+A2;2011 IEC 61000-6-3,2011 IEC 61000-6-4,2011 IEC 60601-1-2,2014 BS EN 60601-1-2,2015 BS EN 62040-2,2006 IEC 62040-2,2016 IEC 62052-11,2003-02 IEC 60255-26, 2013 BS EN 50121-4,2006 EN/ETSI 300 386,2015 EN50091-2,1996 95/54/EC, 1995 97/24/EC, 1997 2004/104/EC, 2004 ECE R10, 2012 FORD-ES XW7/T-1A278-AC/IEC 61326-1,2012 SAE J1113-41,2000 GR 1089,2006 AIS-004,2015 | 10 kHz to 6 GHz Upto 180 dBµV/m 1m, 3m and 10m distances |

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|-----|----------------------------|------------------------------------|---|---|
| | | Harmonic Current Emission test | IEC 61000-3-2,2018 BS EN 61000-3-2,2014 IEC 60601-1-2,2014 BS EN 60601-1-2,2015 BS EN 62040-2,2006 IEC 62040-2,2016 IEC 61000-6-3,2011 BS EN 61000-6-3,2011 | Upto 40 th Harmonics 16 A/phase |
| | | Voltage Fluctuation & Flicker test | IEC 61000-3-3,2013 BS EN 61000-3-3,2013 IEC 60601-1-2,2014 BS EN 60601-1-2,2015 BS EN 62040-2,2006 IEC 62040-2,2016 IEC 61000-6-3,2011 BS EN 61000-6-3,2011 | 16 A/phase |
| | | RF Radiated Susceptibility Test | BS EN 61000-4-3,2010 IEC 61000-4-3,2010-04 CISPR 24,2010 CISPR 14-2,2015 CISPR 35,2016 BS EN 55024,2010 EN50091-2,1996 BS EN 55014-2,2015 IEC 60601-1-2,2014 BS EN 60601-1-2,2015 BS EN 61000-6-1,2007 BS EN 61000-6-2,2005 IEC 61000-6-1,2016 IEC61000-6-2,2016 BS EN 62040-2,2006 IEC 62040-2,2016 IEC 60255-26, 2013 IEC 61326-1,2012 | 10 kHz to 6 GHz Upto 30 V/m |

Neeraj Verma
Convenor

Birendra Prasad Murmu
Program Manager

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| | | | IEC 62052-11,2003 IEEE C37.90.2,2004 95/54/EC,1995 97/24/EC, 1997 2004/104/EC, 2004 AIS 004,2015 ISO 11452-2,2004 FORD-ES-XW7 T-1A278-AC EN ETSI 300 386,2015 ECE R10,2012 ISO 11451-2,2015 | |
| | | Electrostatic Discharge immunity test | BS EN 61000-4-2,2009 IEC 61000-4-2,2008 BS EN 55014-2,2015 BS EN 55024,2010 CISPR 14-2,2015 CISPR 35,2016 EN50091-2,1996 BS EN 61000-6-1,2007 BS EN 61000-6-2,2005 IEC 61000-6-1,2016 IEC 61000-6-2,2016 CISPR 24,2010 IEC 60601-1-2,2014 BS EN 60601-1-2,2015 BS EN 62040-2,2006 IEC 62040-2,2016 IEC 60255-26, 2013 IEC 62052-11,2003 IEC 61326-1,2012 ISO 10605,2008 SAE J1113-13,2011 FORD-ES XW7 | Upto 30 kV in Contact Discharge & Air Discharge |

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| | | | T-1A278-AC EN/ETSI 300 386,2015 | |
| | | Electrical Fast Transient (EFT)/ Burst Immunity test | BS EN 61000-4-4,2012 IEC 61000-4-4,2012 IEC 60601-1-2,2014 BS EN 60601-1-2,2015 BS EN 55014-2,2015 CISPR 14-2,2015 CISPR 35,2016 EN50091-2,1996 BS EN 55024,2010 CISPR 24,2010-08 IEEE 62.45,2002 BS EN 61000-6-1,2007 BS EN 61000-6-2,2005 IEC 61000-6-1,2016 IEC61000-6-2,2016 BS EN 62040-2,2006 IEC 62040-2,2016 IEC 60255-26, 2013 IEC 62052-11,2003 IEC 61326,2012 IEC 255-22-4,2008 EN/ETSI 300 386,2015 | 0.25 kV to 4 kV |
| | | High Energy/ Telecom Surge Immunity test | BS EN 61000-4-5,2006 IEC 61000-4-5,2014 IEC 61000-4-5,2005 IEC 60601-1-2,2014 BS EN 55014-2,2015 EN50091-2,1996 BS EN 55024,2010 CISPR 24,2010 CISPR 14-2,2015 CISPR 35,2016 | 0.5 kV to 6 kV |

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| | | | IEEE 62.45,2002 BS EN 61000-6-1,2007 BS EN 61000-6-2,2005 IEC 61000-6-1,2016 BS EN 60601-1-2,2015 IEC61000-6-2,2016 BS EN 62040-2,2006 IEC 62040-2,2016 IEC 60255-26, 2013 IEC 62052-11,2003 IEC 61326,2012 EN/ETSI 300 386,2015 | |
| | | Conducted RF Susceptibility /Bulk Current Injection Test | BS EN 61000-4-6,2014 IEC 61000-4-6,2013 CISPR 24,2010 CISPR 14-2,2015 CISPR 35,2016 BS EN 55024,2010 BS EN 62040-2,2006 IEC 62040-2,2016 IEC 60255-26, 2013 IEC 62052-11,2003 EN50091-2,1996 BS EN 61000-6-1,2007 BS EN 61000-6-2,2005 IEC 61000-6-1,2016 IEC61000-6-2,2016 IEC 60601-1-2,2014 BS EN 60601-1-2,2015 BS EN 55014-2,2015 ISO 11452-4,2011 SAE J1113-4,2004 IEC 61326,2012 EN/ETSI 300 386,2015 | 9 kHz to 400 MHz Upto 10 V _{rms} Upto 100 mA |

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| | | | GR 1089,2006 AIS 004,2015 | |
| | | Power Frequency Magnetic Field Immunity Test | BS EN 61000-4-8,2010 IEC 61000-4-8,2009 BS EN 55014-2,2015 BS EN 55024,2010 CISPR 24,2010 CISPR 35,2016 IEC 60601-1-2,2014 BS EN 60601-1-2,2015 IEC 60255-26, 2013 IEC 61000-6-1,2016 IEC61000-6-2,2016 IEC 61326,2012 BS EN 62040-2,2006 IEC 62040-2,2016 EN50091-2,1996 | 50 Hz, 60 Hz EUT size: 1 m x 1 m x 2.6 m Upto 1000 A/m |
| | | Pulse Magnetic field immunity test | BS EN 61000-4-9,2016 IEC 61000-4-9,2016 | Upto 1000 A/m |
| | | Voltage dips, Short Interruption & Voltage Variations Immunity test | BS EN 61000-4-11,2004 IEC 61000-4-11,2004 BS EN 55014-2,2015 BS EN 55024,2010 CISPR 24,2010-08 CISPR 14-2,2015 CISPR 35,2016 BS EN 61000-6-1,2007 BS EN 61000-6-2,2005 IEC 61000-6-1,2016 IEC 61000-6-2,2016 IEC 60255-26, 2013 EN50091-2,1996 IEC 60601-1-2,2014 BS EN 60601-1-2,2015 | 0%, 40%, 70% & 80% |

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| | | | BS EN 62040-2,2006 IEC 62040-2,2016 IEC 61326,2012 EN/ETSI 300386,2015 | |
| | | Ring Wave Immunity test (100 KHz) | BS EN 61000-4-12,2017 IEC 61000-4-12,2017 IEC 60255 – 22 – 1,2007 IEC 62052-11,2003 | For Ring wave: 0.25 kV to 6 kV |
| | | Damped Oscillatory Wave Immunity test (100 kHz,1MHz) | IEC 60255-26, 2013 IEC 255-4,1976 IEC 255-22-1,2007 IEEE C.37.90.1,2012 IEEE 62.45,2002 IEC 61000-4-18,2011 BS EN 61000-4-18,2010 | For Damped: 0.25 kV to 2.5 kV |
| | | DC Voltage dips, Short Interruption & Voltage Variations Immunity test | IEC 61000-4-29,2000 BS EN 61000-4-29,2001 IEC 60255-26, 2013 | 40 %,70 %, 80 %, 85 %, 120 % |
| | | Automotive Electrical Transient Immunity Test | ISO 7637-2,2011 ISO 7637-3,2007 SAE J1113-11,2012 FORD-ES XW7T-1A278-AC 2004/104/EC,2004 ISO 7637-2,2004 ISO 16750-2, 2010 AIS 004,2015 ECE R10,2012 SAE J1113-12,2000 | 12 V & 24 V,DC Signal Line |
| | | Automotive Conducted Electrical Transient Emission test | ISO 7637-2,2011 SAE J1113-42,2010 FORD-ES XW7T-1 A278-AC ECE R10,2012 AIS 004,2015 | 400 V |

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| 2. | Electrical/ Electronic Equipment System/ Subsystem | Conducted Emission | CE01-MIL 461C CE03-MIL 461C CE101-MIL 461D,E&F CE102-MIL 461D,E&F | 30 Hz to 15 kHz 15 kHz to 50 MHz 30 Hz to 10 kHz 10 kHz to 10 MHz |
| | | Conducted Susceptibility Power leads | CS01-MIL 461C CS101-MIL 461D,E&F | 30 Hz to 50 kHz 30 Hz to 150 kHz |
| | | Conducted Susceptibility Bulk Cable injection | CS114-MIL 461D,E&F | 10 kHz to 400 MHz |
| | | Conducted Susceptibility Bulk Cable injection impulse Excitation | CS115-MIL 461D,E&F | 5 A Peak Amplitude |
| | | Conducted Susceptibility Damped Sinusoidal Transients, Cable and Power Lead | CS116-MIL 461D,E&F | 10 kHz to 100 MHz $I_{max}=10A$ |

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